YAMAHA RX-V690

Natural Sound Stereo Receiver

Thank you for selecting this YAMAHA stereo receiver.

OWNER'S MANUAL

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IMPORTANT!
Please record the serial number of this unit in the space below.

Serial No.:

The serial number is located on the rear of the unit.
Retain this Owner's Manual in a safe place for future reference.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

CAUTION
RISK OF ELECTRIC SHOCK

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK), NO USER-SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

• Explanation of Graphical Symbols

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

SAFETY INSTRUCTIONS

1 Read Instructions – All the safety and operating instructions should be read before the unit is operated.

2 Retain Instructions – The safety and operating instructions should be retained for future reference.

3 Heed Warnings – All warnings on the unit and in the operating instructions should be adhered to.

4 Follow Instructions – All operating and other instructions should be followed.

5 Water and Moisture – The unit should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

6 Carts and Stands – The unit should be used only with a cart or stand that is recommended by the manufacturer.

6A A unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.

7 Wall or Ceiling Mounting – The unit should be mounted to a wall or ceiling only as recommended by the manufacturer.

8 Ventilation – The unit should be situated so that its location or position does not interfere with its proper ventilation. For example, the unit should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

9 Heat – The unit should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.

10 Power Sources – The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit.

11 Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the unit.

12 Cleaning – The unit should be cleaned only as recommended by the manufacturer.

13 Nonuse Periods – The power cord of the unit should be unplugged from the outlet when left unused for a long period of time.

14 Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the unit.

15 Damage Requiring Service – The unit should be serviced by qualified service personnel when:

A. The power-supply cord or the plug has been damaged; or

B. Objects have fallen, or liquid has been spilled into the unit; or

C. The unit has been exposed to rain; or

D. The unit does not appear to operate normally or exhibits a marked change in performance; or

E. The unit has been dropped, or the cabinet damaged.

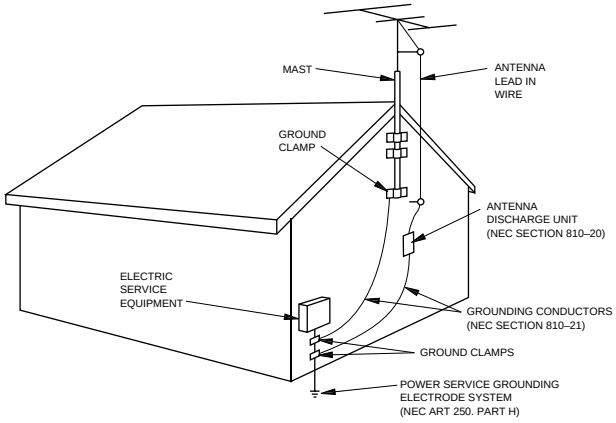
16 Servicing – The user should not attempt to service the unit beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

17 Power Lines – An outdoor antenna should be located away from power lines.

18 Grounding or Polarization – Precautions should be taken so that the grounding or polarization is not defeated.

19 Outdoor Antenna Grounding – If an outside antenna is connected to this unit, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING


MAST
ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810–20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810–21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250. PART H)

NEC – NATIONAL ELECTRICAL CODE

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Caution: Read this before operating your unit

1 To assure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.

2 Install this unit in a cool, dry, clean place – away from windows, heat sources, sources of excessive vibration, dust, moisture and cold. Avoid sources of humming (transformers, motors). To prevent fire or electrical shock, do not expose the unit to rain or water.

3 Do not operate the unit upside-down. It may overheat, possibly causing damage.

4 Never open the cabinet. If something drops into the set, contact your dealer.

5 Do not use force on switches, controls or connection wires. When moving the unit, first disconnect the power plug and the wires connected to other equipment. Never pull the wires themselves.

6 Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.

7 Always set the VOLUME control to "– ∞" before starting the audio source play. Increase the volume gradually to an appropriate level after the play back has been started.

8 To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.

9 Be sure to read the "TROUBLESHOOTING" section regarding common operating errors before concluding that the unit is faulty.

10 AC outlet
Do not connect audio equipment to the AC outlet on the rear panel if that equipment requires more power than the outlet is rated to provide.

FCC INFORMATION

1. IMPORTANT NOTICE : DO NOT MODIFY THIS UNIT!
This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. IMPORTANT : When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. NOTE : This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices.

This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices.

Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6660 Orangethorpe Ave, Buena Park, CA 90620.

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

We Want You Listening For A Lifetime

YAMAHA and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion – and, most importantly, without affecting your sensitive hearing. Since hearing damage from loud sounds is often undetectable until it is too late, YAMAHA and the Electronic Industries Association's Consumer Electronics Group recommend you to avoid prolonged exposure from excessive volume levels.

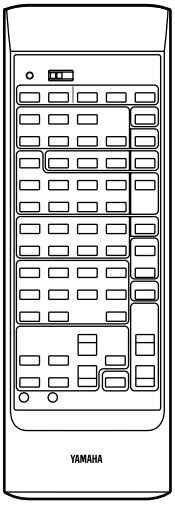
FEATURES

- **5 Speaker Configuration**
  Front: (U.S.A. and Canada models)
  80W + 80W (8Ω) RMS Output Power, 0.04% THD, 20–20,000 Hz
  (Australia, Singapore and General models)
  75W + 75W (8Ω) RMS Output Power, 0.04% THD, 20–20,000 Hz
  Center: (U.S.A. and Canada models)
  80W (8Ω) RMS Output Power, 0.07% THD, 1 kHz
  (Australia, Singapore and General models)
  80W (8Ω) RMS Output Power, 0.07% THD, 1 kHz
  Rear: 25W + 25W (8Ω) RMS Output Power, 0.3% THD, 1 kHz
- **Digital Sound Field Processor (Including Dolby Pro Logic Surround Decoder)**
  5 Programs for Audio Sources
  5 Programs for Audio/Video Sources
- **Automatic Input Balance Control for Dolby Surround**
- **Test Tone Generator for Easier Speaker Balance Adjustment**
- **3 Center Channel Modes (NORMAL/WIDE/PHANTOM)**
- **40-Station Random Access Preset Tuning**
- **Automatic Preset Tuning**
- **Preset Station Shifting Capability (Preset Editing)**
- **IF Count Direct PLL Synthesizer Tuning System**
- **SLEEP Timer**
- **Video Signal Input/Output Capability (Including S Video Connections)**
- **Programmable Remote Control Transmitter**

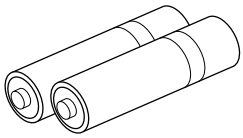
SUPPLIED ACCESSORIES

After unpacking, check that the following parts are contained.

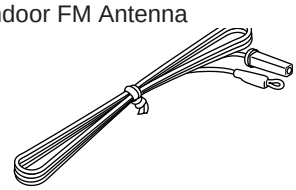
Remote Control Transmitter



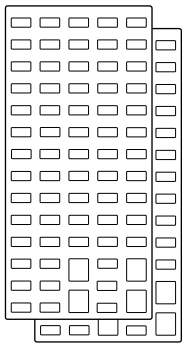
Batteries (size AA, R6, UM-3)



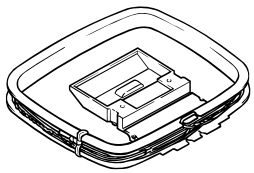
Indoor FM Antenna



User Program Sheets



AM Loop Antenna



PROFILE OF THIS UNIT

You are the proud owner of a Yamaha stereo receiver –an extremely sophisticated audio component. The Digital Sound Field Processor (DSP) built into this unit takes full advantage of Yamaha's undisputed leadership in the field of digital audio processing to bring you a whole new world of listening experiences. Follow the instructions in this manual carefully when setting up your system, and this unit will sonically transform your room into a totally new listening environment – movie theater, concert hall, and so on. In addition, you get incredible realism from Dolby Surround-encoded video sources using the built-in Dolby Pro Logic Surround Decoder.
Please read this operation manual carefully and store it in a safe place for later reference.

Digital Sound Field Processing

What is it that makes live music so good? Today's advanced sound reproduction technology lets you get extremely close to the sound of a live performance, but chances are you'll still notice something missing: the acoustic environment of the live concert hall. Extensive research into the exact nature of the sonic reflections that create the ambience of a large hall has made it possible for Yamaha engineers to bring you this same sound in your own listening room, so you'll feel all the sound of a live concert.

Furthermore, our technicians, armed with sophisticated measuring equipment, have even made it possible to capture the acoustics of a variety of venues such as an actual concert hall, theater, etc. to allow you to accurately recreate one of several live performance environments in your own home.

Dolby Pro Logic Surround

The Dolby Pro Logic Surround Decoder program lets you experience the dramatic realism and impact of a Dolby Surround movie theater sound in your own home. Dolby Pro Logic gets its name from its professional-grade steering logic circuitry, which provides greater effective front and rear channel separation for a much higher degree of realism than the "passive" Dolby Surround circuits found in less sophisticated home audio/video equipment. Dolby Pro Logic Surround provides a true center channel, so there are four independent channels, unlike passive Dolby Surround which has in effect only three channels: left, right, and rear. This center channel allows listeners seated in even less-than-ideal positions to hear the dialog originating from action on the screen while getting a stereo effect as well.

This Dolby Pro Logic Surround Decoder employs a digital signal processing system. This system increases sound stability at each channel and minimizes crosstalk between channels compared to conventional analog Dolby signal processing.
In addition, this unit features a built-in automatic input balance control. This circuit always presents you the best surround conditions without performing manual adjustments.

Dolby Pro Logic Surround + DSP

Additionally you can enjoy sound environment created by the combination of Dolby Pro Logic and YAMAHA DSP. Precise sound movement and orientation by the Dolby Pro Logic technology is added to sound fields which are precisely recreated on the basis of actual acoustic environments by the DSP technology, so it is suitable for any Audio/Video source with video image. This combination is used on sound field programs "DOLBY PRO LOGIC ENHANCED", "70 mm MOVIE THEATER", "TV THEATER" and "SPORTS".

CINEMA DSP

The YAMAHA "CINEMA DSP" logo indicates these programs are created by the combination of Dolby Pro Logic and YAMAHA DSP technology.

SPEAKER SETUP

SPEAKERS TO BE USED

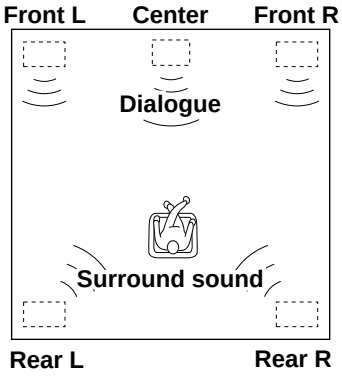
This unit is designed to provide the best sound-field quality with a 5 speaker configuration. The most effective speakers to use with this unit are front speakers, rear speakers and a center speaker. You may omit the center speaker. (Refer to the "**4-Speaker Configuration**" shown below.)
The front speakers are used for the main source sound plus the effect sounds. They will probably be the speakers from your present stereo system. The rear speakers are used for the effect and surround sounds, and the center speaker is for the center sounds (dialog etc.) within the Dolby Surround encoded programs. The center speaker needs to be equal in power to the front speakers, although the rear speakers should not be equal. However, all the speakers should have high enough power handling to accept the maximum output of this unit.

SPEAKER CONFIGURATION

5-Speaker Configuration

This configuration is the most effective and recommended one. In this configuration, the center speaker is necessary as well as the rear speakers. If the digital sound field program **DOLBY PRO LOGIC**, **DOLBY PRO LOGIC ENHANCED**, **70 mm MOVIE THEATER**, **TV THEATER** or **SPORTS** is selected, conversations will be output from the center speaker and the ambience will be excellent.

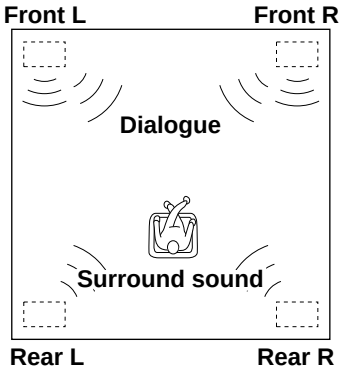
- Set the center channel mode to the "**NORMAL**" or "**WIDE**" position. (For details, refer to page 14.)



4-Speaker Configuration

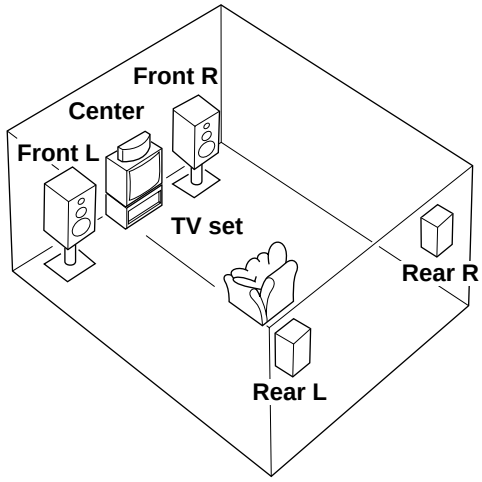
The center speaker is not used in this configuration. If the digital sound field program **DOLBY PRO LOGIC**, **DOLBY PRO LOGIC ENHANCED**, **70 mm MOVIE THEATER**, **TV THEATER** or **SPORTS** is selected, the center sound is output from the left and the right front speakers. However, the sound effect of other programs can be the same as that of the 5-speaker configuration.

- Be sure to set the center channel mode to the "**PHANTOM**" position. (For details, refer to page 14.)



SPEAKER PLACEMENT

The recommended speaker configuration, the 5-speaker configuration, will require two speaker pairs: **front speakers** (your normal stereo speakers), and **rear speakers**, plus a **center speaker**. When you place these speakers, refer to the following.



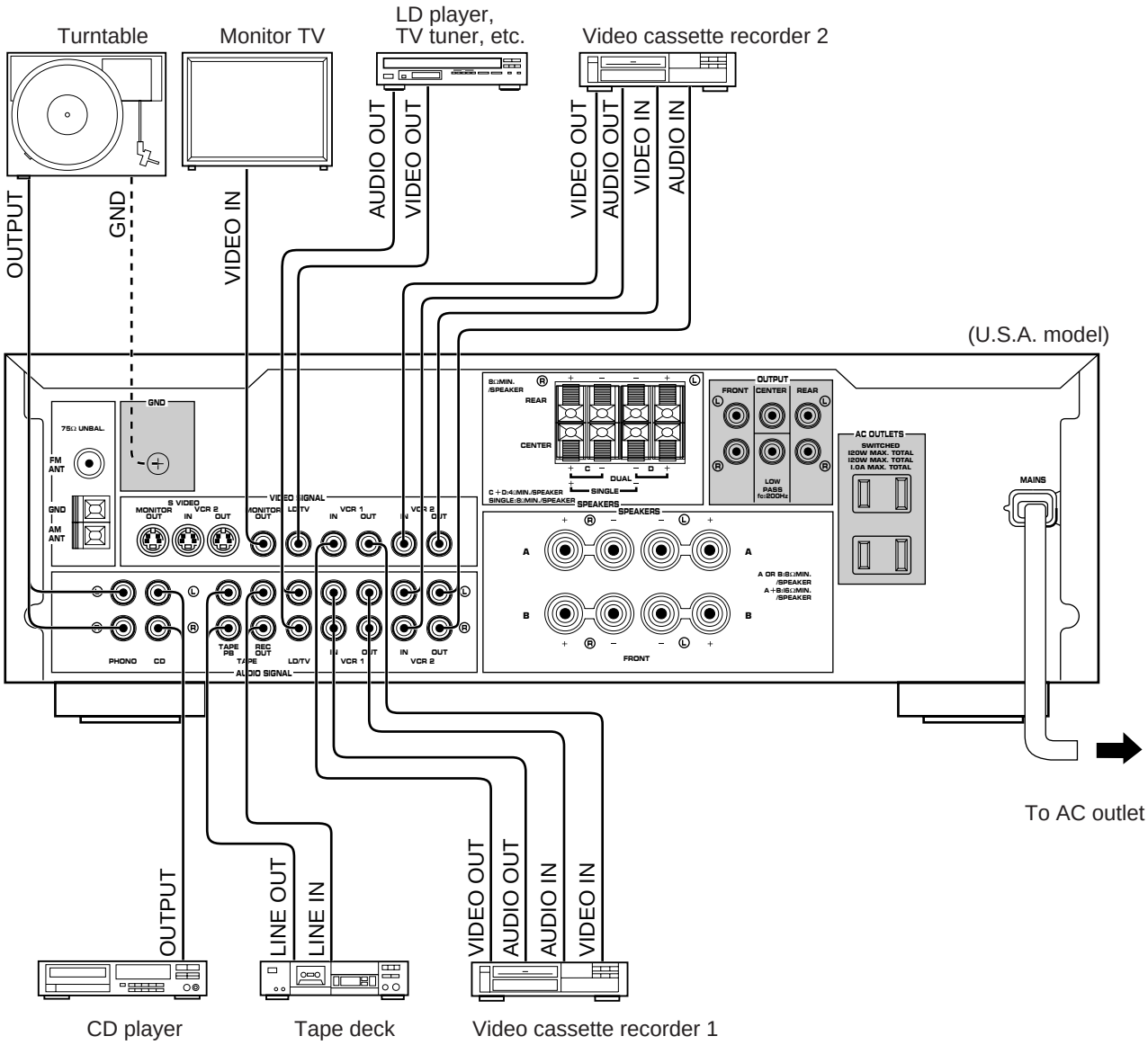
Front: In normal position. (The position of your present stereo speaker system.)
Rear: Behind your listening position, facing slightly inward. Nearly six feet (approx. 1.8 m) up from the floor.
Center: Precisely between the front speakers. (To avoid interference with TV sets, use a magnetically shielded speaker.)

CONNECTIONS

Before attempting to make any connections to or from this unit, be sure to first switch OFF the power to this unit and to any other components to which connections are being made.

CONNECTIONS WITH OTHER COMPONENTS

When making connections between this unit and other components, be sure all connections are made correctly, that is to say **L** (left) to **L**, **R** (right) to **R**, "+" to "+" and "–" to "–". Also, refer to the owner's manual for each component to be connected to this unit.

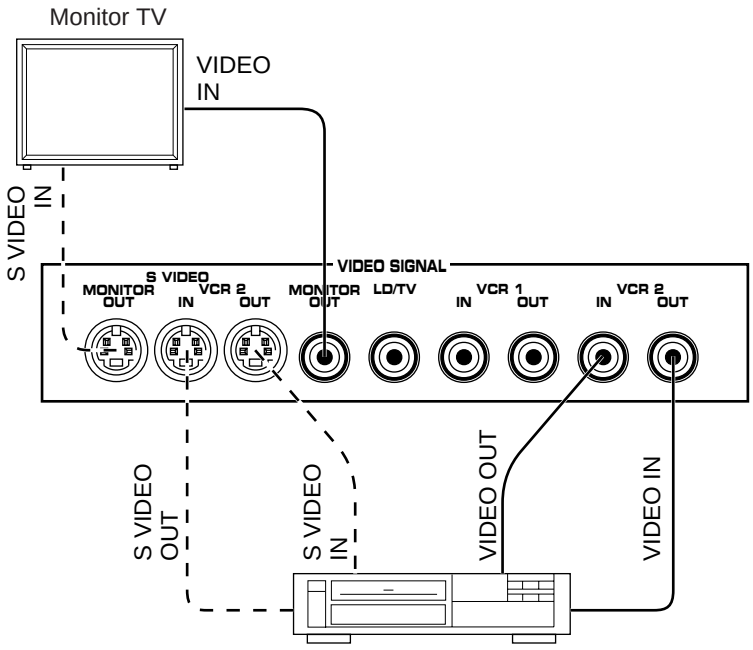


: Refer to "**ABOUT THE ACCESSORY TERMINALS**" on page 11.

CONNECTING TO S VIDEO TERMINALS

If you have a video cassette recorder and a monitor equipped with “S” (high-resolution) video terminals, those terminals can be connected to this unit’s **S VIDEO** terminals. Connect the video cassette recorder’s “S” video input and output terminals to this unit’s **S VIDEO VCR 2 IN** and **OUT** terminals respectively, and connect the monitor’s “S” video input terminal to this unit’s **S VIDEO MONITOR OUT** terminal. Otherwise, connect the video cassette recorder’s composite video terminals to this unit’s composite video terminals, and connect the monitor’s composite video input terminal to this unit’s composite **MONITOR OUT** terminal.

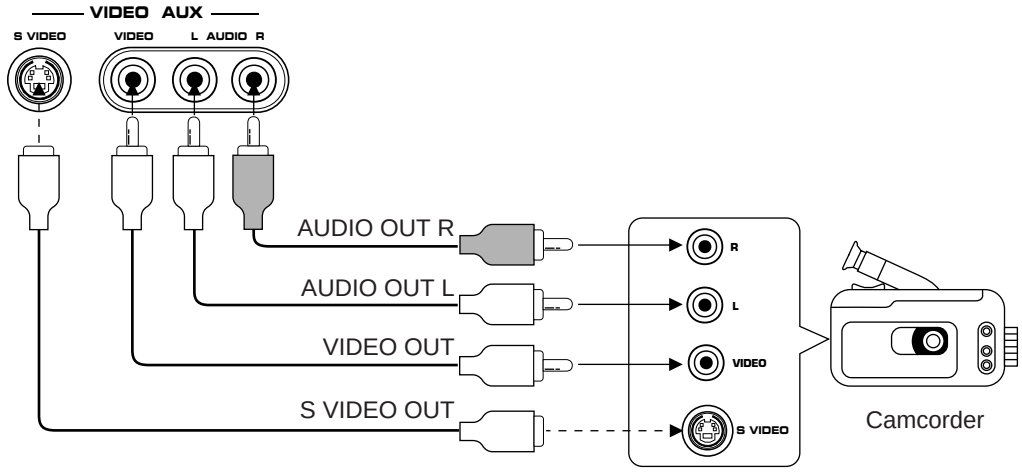
Note
If video signals are sent to both S VIDEO input and composite input terminals, the signals will be sent to their respective output terminals independently.



Video cassette recorder 2

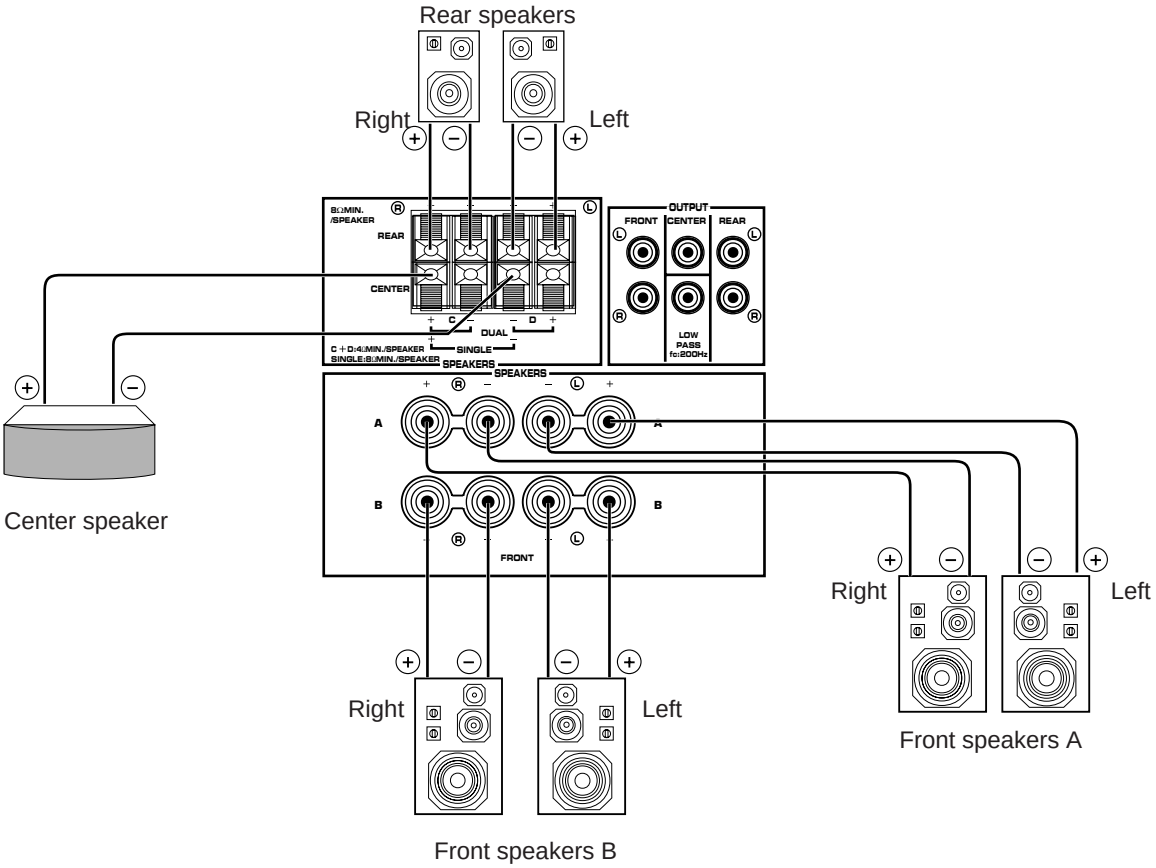
CONNECTING TO VIDEO AUX TERMINALS (ON THE FRONT PANEL)

These terminals are used to connect any video input source such as a camcorder to this unit.



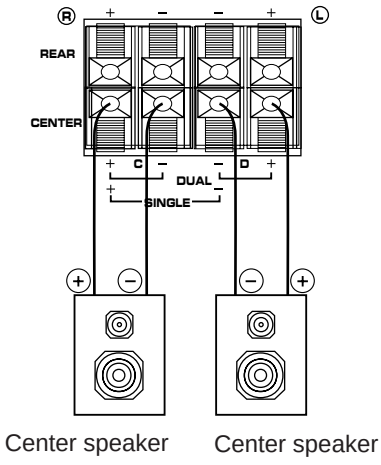
CONNECTING SPEAKERS

Connect the respective speakers to this unit as figured below.

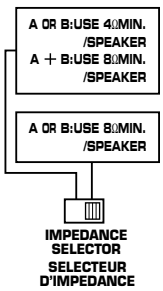


Note on front speaker connection:
One or two speaker systems can be connected to this unit. If you connect only one speaker system, connect it to either the **SPEAKERS A** or **B** terminals.

Note on center speaker connection:
One or two center speakers can be connected to this unit. If you cannot place the center speaker on or under the TV, it is recommended to use two center speakers and place them on both sides of the TV to orient the center sound at the center position.
For connecting two center speakers, follow the method shown below.



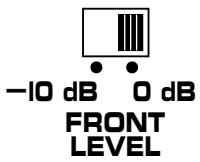
IMPEDANCE SELECTOR switch
(Canada model only)
Be sure to switch this only when the power of this unit is turned off. Select the position proper for the use of your front speakers.



When using one pair of front speakers;
- If the impedance of each speaker is 8Ω or higher, set to right (▥).
- If the impedance of each speaker is 4Ω or higher, but lower than 8Ω, set to left (▥).

When using two pairs of front speakers;
The impedance of each speaker must be 8Ω or higher.
Set this switch to left (▥).

FRONT LEVEL switch
(Australia and Singapore models only)
Normally set to "0 dB". If desired, you can decrease the output level at the **FRONT SPEAKERS** terminals by 10 dB by setting this switch to "–10 dB". (Refer to "**Notes**" on page 15.)



How to Connect:

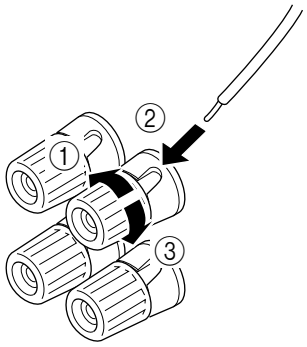
Connect the **SPEAKERS** terminals to your speakers with wire of the proper gauge, cut as short as possible. If the connections are faulty, no sound will be heard from the speakers. Make sure that the polarity of the speaker wires is correct, that is, + and – markings are observed. If these wires are reversed, the sound will be unnatural and will lack bass. **Do not let the bare speaker wires touch each other and do not let them touch the metal parts of this unit as this could damage this unit and/or speakers.**

Note

Use speakers with the specified impedance shown on the rear of this unit.

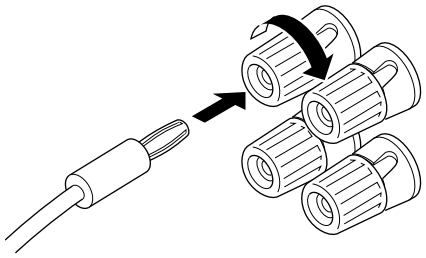
For connecting to the FRONT SPEAKERS terminals

Red: positive (+)
Black: negative (–)



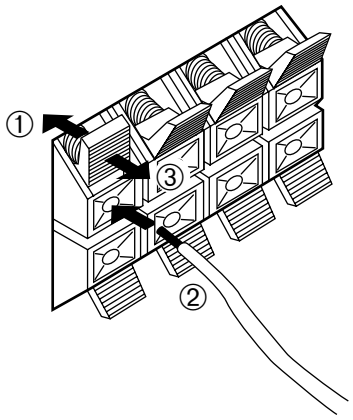
① Unscrew the knob.
② Insert the bare wire. [Remove approx. 5mm (1/4") insulation from the speaker wires.]
③ Tighten the knob and secure the wire.

* **<For U.S.A., Canada and General models only>**
Banana Plug connections are also possible. Simply insert the Banana Plug connector into the corresponding terminal.



For connecting to the REAR and CENTER SPEAKERS terminals

Red: positive (+)
Black: negative (–)



① Press up the tab.
② Insert the bare wire. [Remove approx. 5mm (1/4") insulation from the speaker wires.]
③ Release the tab and secure the wire.

ABOUT THE ACCESSORY TERMINALS

AC OUTLET(S) (SWITCHED)

(U.S.A., Canada, Singapore and General models)
.....2 SWITCHED OUTLETS
(Australia model) ..... 1 SWITCHED OUTLET
Use these to connect the power cords from your components to this unit.
The power to the **SWITCHED** outlets is controlled by this unit's **POWER** switch or the provided remote control transmitter's **POWER** key. These outlets will supply power to any component whenever this unit is turned on.
The maximum power (total power consumption of components) that can be connected to the **SWITCHED AC OUTLET(S)** is as follows.
..... 120W

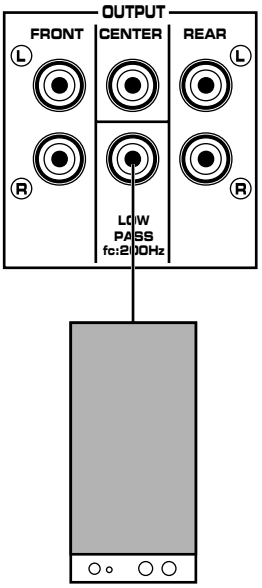
GND terminal (For turntable use)

Connecting the ground wire of the turntable to this terminal will normally minimize hum, but in some cases better results may be obtained with the ground wire disconnected.

LOW PASS terminal

This terminal is for output to a monaural amplifier driving a subwoofer. Only frequencies below 200 Hz from the front and center channels are output.

ADDING A SUBWOOFER
You may wish to add a subwoofer to reinforce the bass frequencies.
Connect the **LOW PASS** terminal to the INPUT terminal of the subwoofer amplifier, and connect the speaker terminals of the subwoofer amplifier to the subwoofer.
With some subwoofers, including the Yamaha Active Servo Processing Subwoofer System, the amplifier and subwoofer are in the same unit.



Subwoofer system

FRONT OUTPUT terminals

These terminals are for front channel line output. There is no connection to these terminals when you use the built-in amplifier.
However, if you drive front speakers with an external stereo power amplifier, connect the input terminals of the external amplifier (MAIN IN or AUX terminals of a power amplifier or an integrated amplifier) to these terminals.

REAR OUTPUT terminals

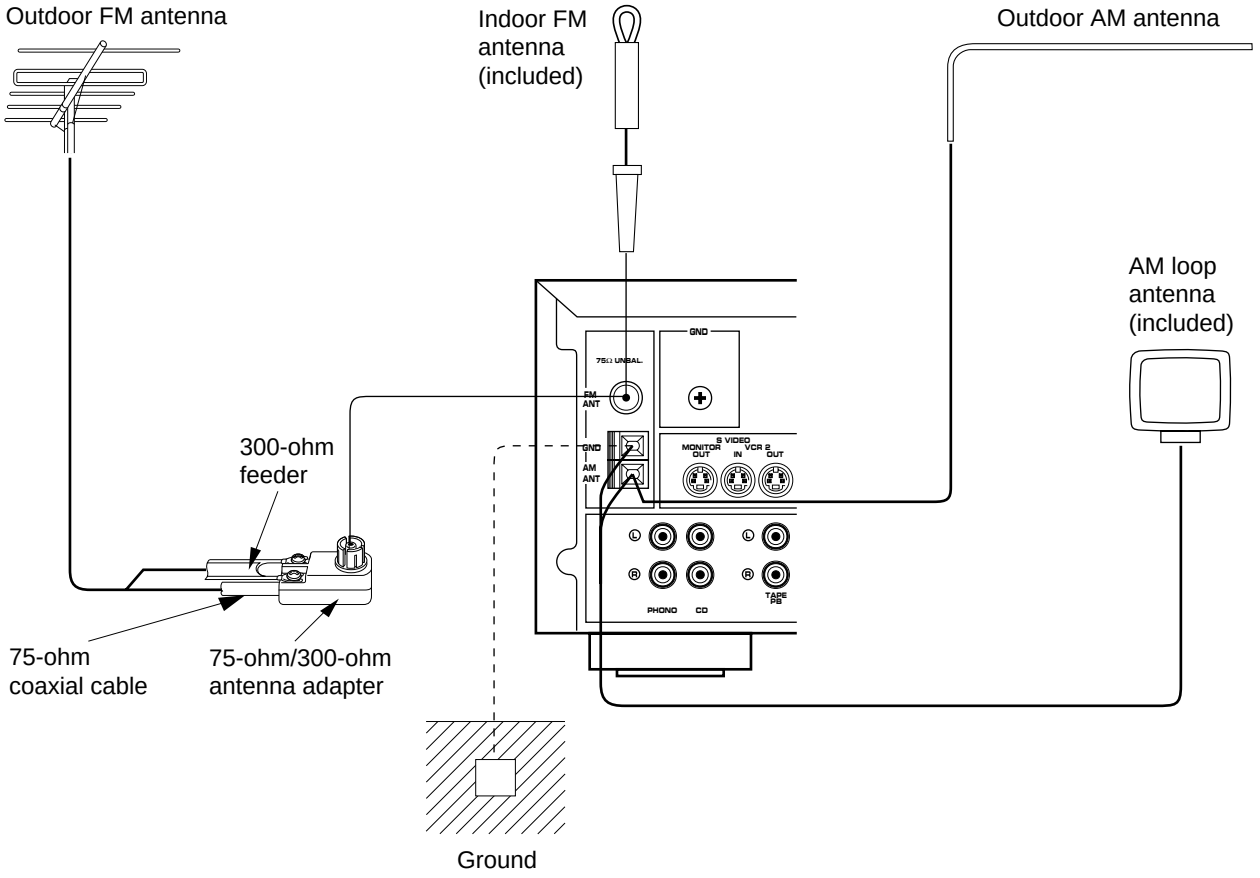
These terminals are for rear channel line output. There is no connection to these terminals when you use the built-in amplifier.
However, if you drive rear speakers with an external stereo power amplifier, connect the input terminals of the external amplifier (MAIN IN or AUX terminals of a power amplifier or an integrated amplifier) to these terminals.

CENTER OUTPUT terminal

This terminal is for center channel line output. There is no connection to this terminal when you use the built-in amplifier.
However, if you drive a center speaker with an external power amplifier, connect the input terminal of the external amplifier to this terminal.

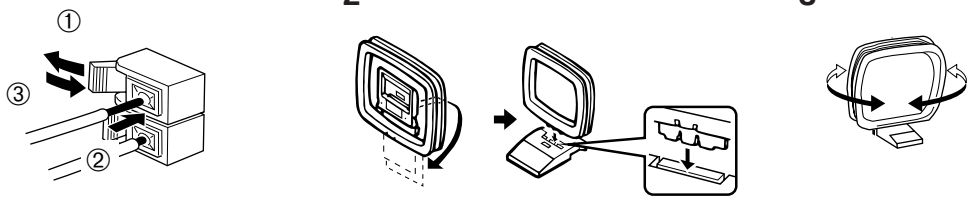
ANTENNA CONNECTIONS

- Each antenna should be connected to the designated terminals correctly, referring to the following diagram.
- Both AM and FM indoor antennas are included with this unit. In general, these antennas will probably provide sufficient signal strength. Nevertheless, a properly installed outdoor antenna will give clearer reception than an indoor one. If you experience poor reception quality, an outdoor antenna may result in improvement.



Connecting the AM loop antenna

1 **2** **3**



Orient so that the best reception is obtained.

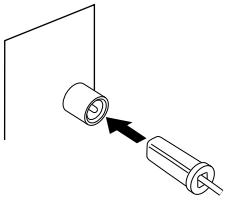
* The AM loop antenna should be placed apart from the main unit. The antenna may be hung on a wall.
* The AM loop antenna should be kept connected, even if an outdoor AM antenna is connected to this unit.

GND terminal

For maximum safety and minimum interference, connect the **GND** terminal to a good earth ground. A good earth ground is a metal stake driven into moist earth.

Notes

- When connecting the indoor FM antenna, insert its connector into the **FM ANT** terminal firmly.

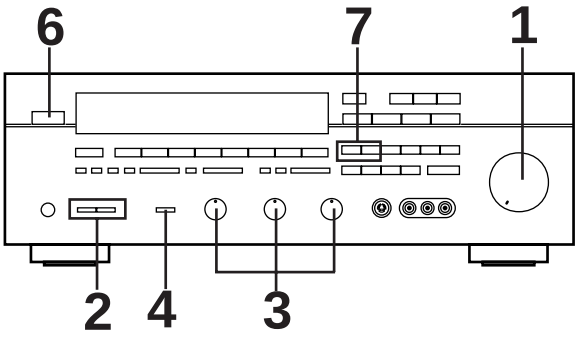


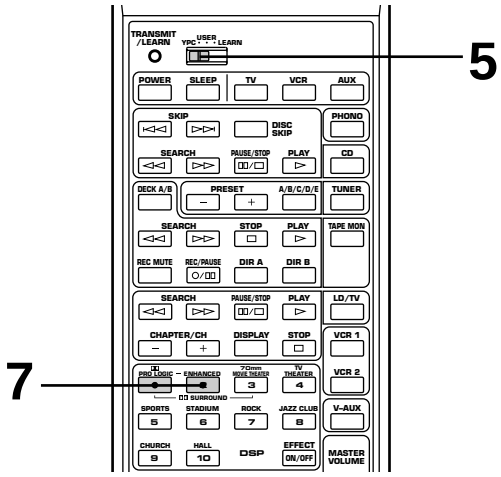
- If you need an outdoor FM antenna to improve FM reception quality, either 300-ohm feeder or coaxial cable may be used. In locations troubled by electrical interference, coaxial cable is preferable.

SPEAKER BALANCE ADJUSTMENT

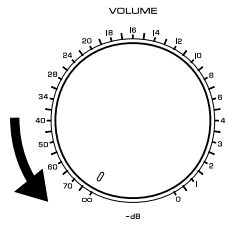
This procedure lets you adjust the sound output level balance between the front, center, and rear speakers using the built-in test tone generator. When this adjustment is performed, the sound output level heard at the listening position will be the same from each speaker. This is important for the best performance of the digital sound field processor.

The adjustment of each speaker output level should be done at your listening position with the remote control transmitter. Otherwise, the result may not be satisfactory.



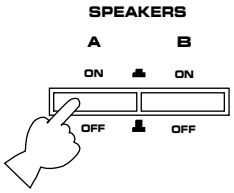


1



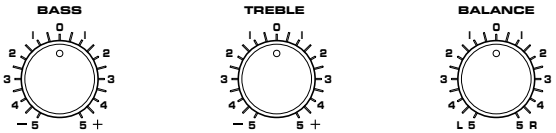
Set to the " ∞ " position.

2 Select the front speakers to be used.



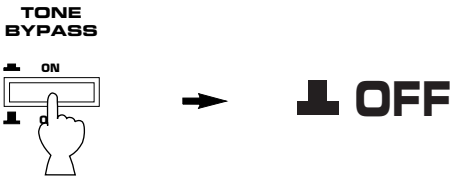
* If you use two front speaker systems, press both the A and B switches.

3

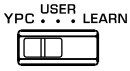


Set to the "0" position.

4

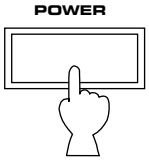


5

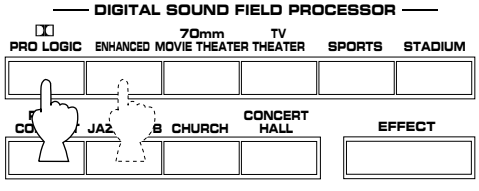


Set to "YPC".

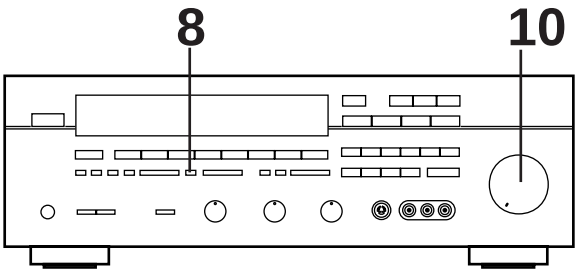
6 Turn the power on.

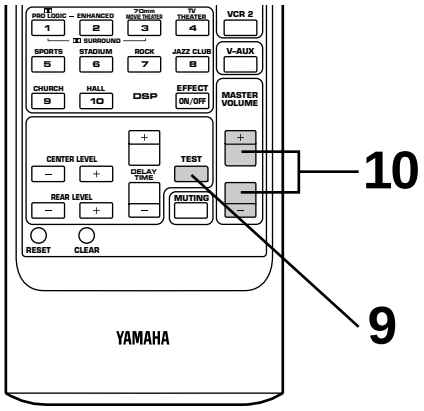


7 Select the PRO LOGIC or PRO LOGIC ENHANCED mode, so that the corresponding name is illuminated on the display.

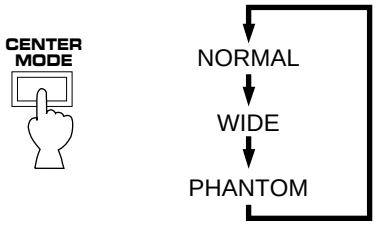


CONTINUED





8 Select the center channel output mode according to your speaker configuration.
(Refer to "**SPEAKER CONFIGURATION**" on page 6.)



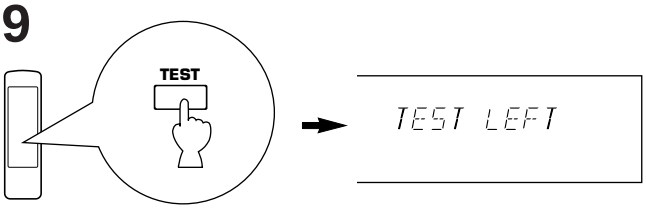
On the feature of each mode, refer to the "**Note**" shown below.

Note
In step 8, when you select the center channel output mode, note the following.

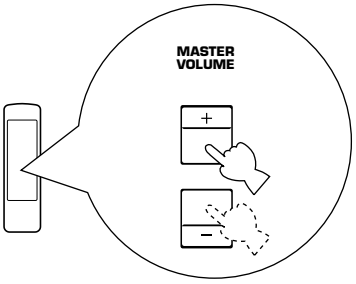
For 5 speaker configuration)
NORMAL: Select this mode when you use a center speaker that is smaller than the front speakers. In this mode, the bass tone will be output from the front speakers.
WIDE: Select this mode when you use the center speaker approximately same sized as the front speakers.

For 4 speaker configuration)
PHANTOM: Select this mode when you do not use the center speaker. The center sound will be output from the left and right front speakers.

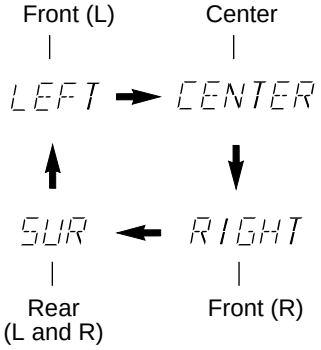
9



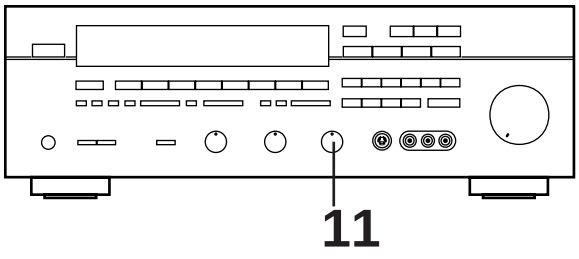
10 Turn up the volume.

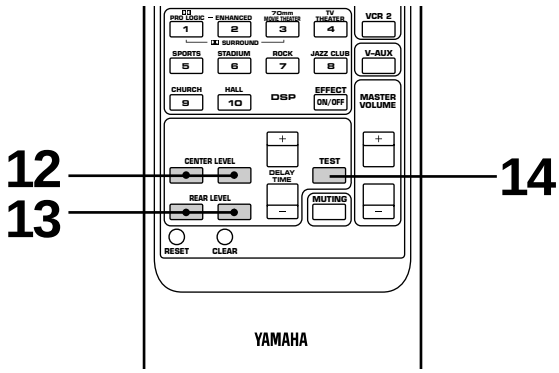


You will hear a test tone (like pink noise) from the left front speaker, then the center speaker, then the right front speaker, and then the rear speakers, for about two seconds each. The display changes as shown below.



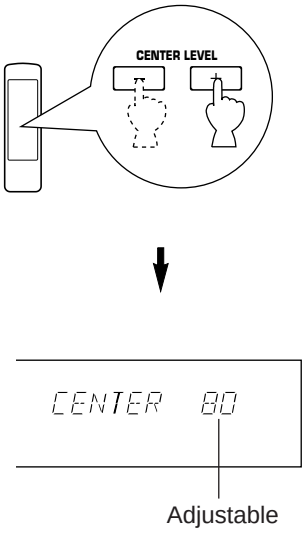
* The test tone from the left rear speaker and the right rear speaker will be heard at the same time.



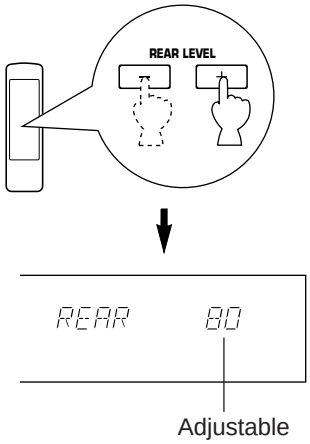


11 Adjust the **BALANCE** control so that the effect sound output level of the left front speaker and the right front speaker are the same.

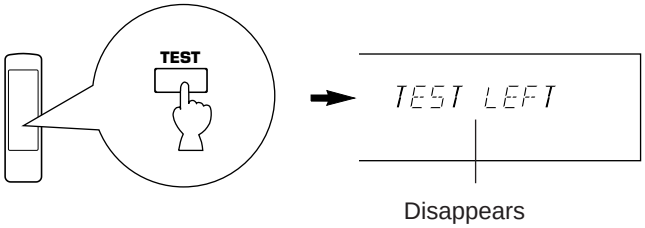
12 Adjust the sound output level of the center speaker to be at the same level as that of the front speakers with the **CENTER LEVEL** keys.



13 Adjust the sound output level of the rear speakers to be at the same level as that of the front speakers with the **REAR LEVEL** keys.



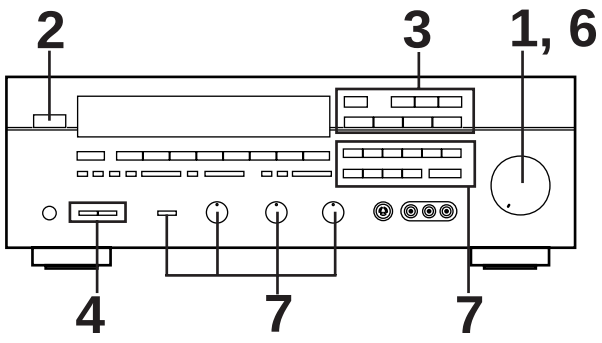
14 Cancel the test tone.



Notes

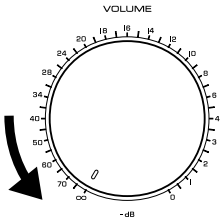
- Once you have completed these adjustments, you can adjust whole sound level on your audio system by using the **VOLUME** control (or the **MASTER VOLUME** keys on the remote control transmitter).
- If you use external power amplifiers, their volume controls may also be adjusted to achieve proper balance.
- In step 12, if the center channel mode is in the "**PHANTOM**" position, the sound output level of the center speaker cannot be adjusted. This is because in this mode, the center sound is automatically output from the left and right front speakers.
- **<Australia and Singapore models only>**
  If there is insufficient sound output from the center and rear speakers, you may decrease the front speaker output level by setting the **FRONT LEVEL** switch on the rear panel to "–10 dB".

BASIC OPERATIONS



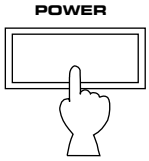
TO PLAY A SOURCE

1

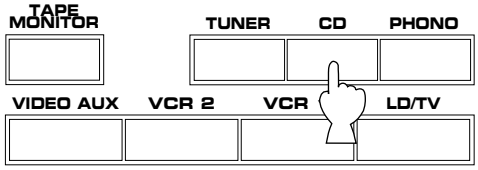


Set to the " ∞ " position.

2 Turn the power on.

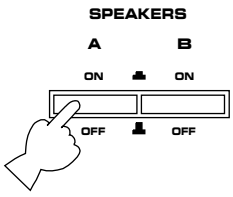


3 Select the desired input source by using the input selector buttons.
(For video sources, turn the TV/monitor ON.)



* The name of the selected input source will appear in the display.

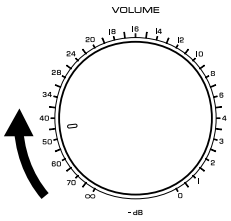
4 Select the front speakers to be used.



* If you use two front speaker systems, press both the A and B switches.

5 Play the source. (For detailed information on the tuning operation, refer to page 19.)

6



Adjust to the desired output level.

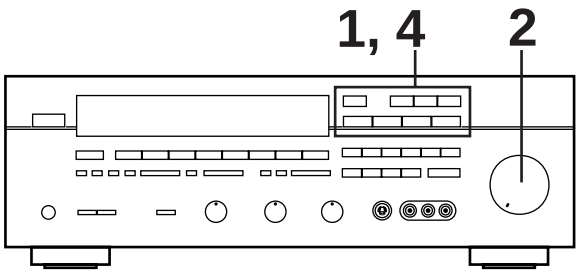
7 If desired, adjust the **BASS, TREBLE, BALANCE** controls, etc. (refer to page 18) and use the digital sound field processor. (Refer to page 25.)

Notes on using the input selector buttons

- Note that pressing on each input selector button selects the source which is connected to the corresponding input terminals on the rear panel.
  * To select the source connected to the **VIDEO AUX** terminals on the front panel, press **VIDEO AUX**.
- The selection of **TAPE MONITOR** cannot be canceled by pressing another input selector button. To cancel it, press **TAPE MONITOR** again.
  When you select a button other than **TAPE MONITOR**, make sure that **TAPE MONITOR** is not also selected.
- If you select the input selector button for a video source without canceling the selection of **TAPE MONITOR**, the playback result will be the video image from the video source and the sound from the audio tape.
- Once you play a video source, its video image will not be interrupted even if the input selector button for an audio source is selected.

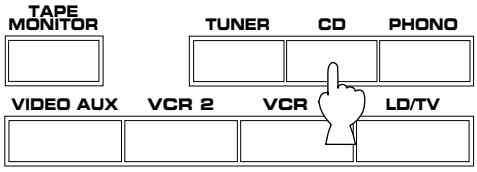
To turn off the power

Press the **POWER** switch again.

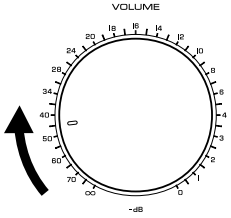


TO RECORD A SOURCE TO TAPE (OR DUB FROM TAPE TO TAPE)

1 Select the source to be recorded.

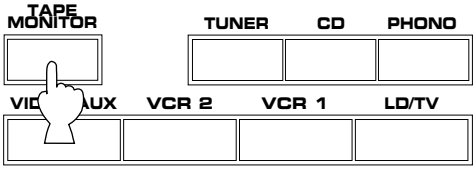


2 Play the source and then turn the **VOLUME** control up to confirm the input source. (For detailed information on the tuning operations, refer to page 19.)



3 Set the tape deck or VCR to the recording mode.

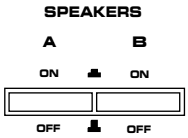
4 If the tape deck is used for recording, you can monitor the sounds being recorded by pressing **TAPE MONITOR**.



Note
DSP, **VOLUME**, **BASS**, **TREBLE** and **BALANCE** control settings have no effect on the material being recorded.

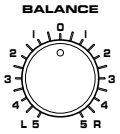
Selecting the SPEAKER system

Because one or two speaker systems (as front speakers) can be connected to this unit, the **SPEAKERS** switches allow you to select speaker system **A** or **B**, or both at once.



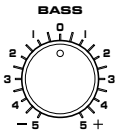
Adjusting the BALANCE control

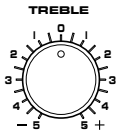
Adjust the balance of the output volume to the left and right speakers to compensate for sound imbalance caused by speaker location or listening room conditions.



Note
This control is effective only for the sound from the front speakers.

Adjusting the BASS and TREBLE controls





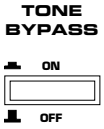
BASS : Turn this clockwise to increase (or counter-clockwise to decrease) the low frequency response.

TREBLE : Turn this clockwise to increase (or counter-clockwise to decrease) the high frequency response.

Note
These controls are effective only for the sound from the front speakers.

Using the TONE BYPASS switch

Press this switch to revert instantly to the flat states of the **BASS** and **TREBLE** controls without changing the setting of these controls.



When you listen with headphones

Connect the headphones to the **PHONES** jack. You can listen to the sound to be output from the front speakers through headphones.
When listening with headphones privately, set both the **SPEAKERS A** and **B** switches to the **OFF** position and switch off the digital sound field processor (so that no DSP program name is illuminated on the display) by pressing the **EFFECT** switch.